

Public Health Implications of the Legalization of Marijuana

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Objectives

- Identify what marijuana is, the components of marijuana and the difference between recreational and medical marijuana usage.
- Explain the positive and negative effects medical marijuana has on the body.
- Explain the public health implications associated with medical marijuana.
- Explore public health interventions that may be used to assist regulation of medical marijuana should it be legalized in ND in the future.

What is Marijuana?

- Marijuana is derived from the hemp plant *Cannabis sativa* (National Institute on Drug Abuse, 2015).
- Two main components
 - delta-9-tetrahydrocannabinol (THC)
 - Psychoactive component – produces feeling of being “high”
 - Cannabidiol (CBD)
 - Non-psychoactive component – even when used in large amounts, will never produce “high” feeling

(National Institute on Drug Abuse, 2015)
(Nursing 456 Public Health Class, 2014)

Current North Dakota Legislation

- 2015 HB1430 – failed 26-67
- House Human Services Committee proposed an interim study on the issue.
 - “HCR 3059 would allow the state of ND to take a proactive approach to understanding the repercussions of the use of medical marijuana and to establish best practices prior to any future legalization.”
–Jennifer Chevalier
 - No one testified in opposition
 - Failed 7-6.



Medical Conditions Benefiting from Medicinal Marijuana

- Pain (chronic/neuropathic)
- HIV associated sensory neuropathy
- Multiple Sclerosis (MS)
- Amyotrophic-lateral-sclerosis (ALS)
- Tourette's Syndrome
- Alzheimer's Disease
- Epilepsy
- Cancer
- Schizophrenia
- Inflammatory Diseases
- Nausea/Loss of appetite

(Nursing 456 Public Health Class, 2014)

Negative Effects of Marijuana

- Cardiovascular
 - Orthostatic hypotension, syncope, ischemia, and cardiac dysrhythmias
- Cerebrovascular
 - Increases the cerebrovascular resistance, systolic velocity, and reduces cerebral blood flow; also reduces the cerebral autoregulatory capacity
 - Could lead to stroke
- Respiratory
- Peripheral Vascular
 - Acute and/or progressive ischemia
- Ammonia and Hydrogen Cyanide
 - 20 times more Ammonia than cigarettes, 3-5 times more hydrogen cyanide than cigarettes

(Nursing 456 Public Health Class, 2014)

Negative Effects on Brain Function

- Impaired memory, decreased processing speed, impaired verbal fluency, difficulty paying attention, and a decrease in overall IQ
- Increased rate of aggression and mental health issues
 - Likely associated with the potency of marijuana strain used (i.e. higher potency=more aggressive rate)
- Cannabinoid receptors located in the hippocampus, cerebellum, basal ganglia, and cerebral cortex of the brain
 - Influential in pleasure, memory, thinking, concentration, sensory and time perception, and coordinated movement
 - Long term effects of marijuana usage could lead to problems with learning, memory, coordination, and judgment.

(Nursing 456 Public Health Class, 2014)

Marijuana and Pregnancy

- Marijuana is the most commonly used illicit drug during pregnancy.
- THC interferes with fetal brain development
- Negative effects
 - Anencephaly
 - Cognitive deficits
 - Difficulty with inhibitory control
 - Increased sensitivity to illicit drugs later in life
 - Low birth weight
 - Small for gestational age in infants

(Nursing 456 Public Health Class, 2014)

Marijuana and Children

- Can affect a child's thinking, memory, coordination, and concentration.
- Potential temporary side effects
 - Difficulty with problem solving, thinking and learning
 - Loss of coordination
 - Distorted perception
 - Increase in appetite
 - Lightheadedness/drowsiness
 - Decrease in inhibitions
- Potential long term effects
 - Changes in the brain, respiratory problems, immune system complications, emotional disturbances, and fertility issues in both men and women later in life
- Benefits of marijuana use for children with seizure disorders and cancers
 - We need more evidence to determine safety

(Nursing 456 Public Health Class, 2014)

Marijuana and Adolescents

- May lead to long-term negative consequences
 - Decrease in brain connectivity in the learning and memory areas
 - Loss in IQ points
 - Difficulty retaining information, risky decision making, impaired driving
- Interventions in youth
 - Advocate for comprehensive school policy
 - Provide resources and support for users who wish to quit
 - Ensure representation of local communities in the state on issues related to marijuana use
 - Provide parents with effective education and resources to take on the responsibility of teaching their children about marijuana

(Nursing 456 Public Health Class, 2014)

Crossover - Medical vs. Recreational

- Does legalizing medical marijuana in a state lead to increased recreational use?
 - Evidence of crossover from medicinal marijuana into the black market for recreational use
 - Medical marijuana availability in a city was directly related to more individuals using marijuana and their frequency of use
 - Very little research on this subject

(Nursing 456 Public Health Class, 2014)

Gateway Drug?

- Twin Study
 - Twins using marijuana were four times more likely than their sibling counterpart to use cocaine and five times more likely to use hallucinogens such as LSD.
- Medicinal marijuana users
 - Seeking a strain of marijuana specific to what can help treat them and are unlikely to start using other illicit drugs in seek of a "high".
- Recreational marijuana users
 - Seeking the best "high" they can get and in turn are seeking high potency marijuana and therefore are likely to try more "hardcore" drugs in search of a better high than marijuana.

(Nursing 456 Public Health Class, 2014)

Distribution

- Rising concerns related to the distribution aspect of the legalization of medical marijuana
 - How to regulate packaging
 - Education to the consumer about disposal
 - The potencies and forms that medical marijuana is provided in
 - Where medical marijuana products are being dispensed
 - Who should be allowed to handle, prescribe, and dispense medical marijuana
- Necessary to look at other states legislative laws and decisions, and what is included in their regulations
- Norml.org/laws

(Nursing 456 Public Health Class, 2014)

Distribution/Regulation

- Taxation
 - Up to the discretion of each state
 - Could result in exponentially larger revenue for the state government
 - Examples of uses for sales tax revenue include: hiring school nurses, social workers, and psychologists to help prevent and treat substance abuse among students; substance abuse programs; school construction; and training and equipment for law enforcement agencies to deal with marijuana-specific problems
- Changing marijuana from a Schedule I drug to a Schedule II or III
 - Standardized distribution and regulation laws across all states
 - Further research conducted at the federal level regarding risks and benefits of marijuana

(Nursing 456 Public Health Class, 2014)

Dispensaries/Pharmacies

- Currently, pharmacists are not able to recommend a source of medical marijuana, provide specific instructions for the drug's use, or obtain the drug for a patient's use.
- Beneficial for a pharmacist to supervise the making of whichever form of medical marijuana has been prescribed.
- A future possibility is to have local and nationwide pharmacies become legalized medical marijuana dispensaries. This would allow for medical marijuana prescriptions to be contained in a safe and secure environment and allow for strict protocol for monitoring the distribution of the product.

(Nursing 456 Public Health Class, 2014)

Other Distribution Concerns

- Packaging
 - Edible items that look similar to popular food items
 - Butterfinger bar, popular ice cream bars, soda drinks, chocolate hazelnut spreads, and toaster pastries
- Regulation as a state
 - Child proof containers
 - Prescription identification matching the person with the prescription
 - Education on proper disposal



(Nursing 456 Public Health Class, 2014)

State vs. Federal

- Federal level
 - Schedule I (addictive with no medical purpose) substance under Controlled Substance Act
 - Could be pressure in the future to change to Schedule II (prescribed for medical purposes)
- State level
 - 35 states allow marijuana products with high CBD/low THC for the purposes of either research or medicinal value
- Vital to align the goals of state and federal governments

(Nursing 456 Public Health Class, 2014)

Testing and DUI

- 25% of all positive drug tests for fatally injured drivers could be attributed to cannabinoids
- Cannabinoids also accounted for 43% among fatalities involving drivers 24 years of age and younger.
- The THC level that represents comparable impairment to a blood alcohol content of 0.05% would be 7-10 nanograms per milliliter in blood
- Some driving impairments, including decreased car handling performance, increased reaction time, impaired time and distance estimation, inability to maintain headway, lateral travel, subjective sleepiness, impaired motor coordination, and impaired sustained vigilance can persist for up to three hours after the use of marijuana.
- Any community that has legalized marijuana needs to ensure that law enforcement has the tools and skills to identify a person that is under the influence.

(Nursing 456 Public Health Class, 2014)

Other Regulation

- Interventions
 - Collaboration to standardize marijuana laws
 - Collaboration with law enforcement
 - Education
 - Health teaching

References

- National Institute on Drug Abuse. (2015). *Is marijuana medicine?* Retrieved from <http://www.drugabuse.gov/publications/drugfacts/marijuana-medicine>
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